

STARCH:

Chemistry and Technology

EDITED BY
ROY L. WHISTLER

DEPARTMENT OF BIOCHEMISTRY
PURDUE UNIVERSITY
LAFAYETTE, INDIANA

EUGENE F. PASCHALL

MOFFETT TECHNICAL CENTER
CORN PRODUCTS CO.
ARGO, ILLINOIS

ASSISTANT EDITORS

J. N. BEMILLER
DEPARTMENT OF CHEMISTRY
SOUTHERN ILLINOIS UNIVERSITY
CARBONDALE, ILLINOIS

HUGH J. ROBERTS
KRAUSE MILLING COMPANY
MILWAUKEE, WISCONSIN

VOLUME II
INDUSTRIAL ASPECTS

1967



BEST AVAILABLE COPY

Academic Press New York and London

CHAPTER XIII

STARCH DERIVATIVES

By HUGH J. ROBERTS

Krause Milling Company, Milwaukee, Wisconsin

I.	Introduction	293
II.	Starch Esters	297
	1. Formates	297
	2. Higher Aliphatic Carboxylic Esters	298
	3. Functionally Substituted Aliphatic Esters	300
	4. Aromatic Carboxylic Esters	303
	5. Carbamates	305
	6. Sulfonates	307
	7. Inorganic Esters	307
III.	Starch Ethers	312
	1. Alkyl Ethers	312
	2. Substituted Alkyl Ethers	316
	3. O-Allylstarch	322
	4. Benzyl Ethers	324
	5. Miscellaneous Ethers	325
IV.	Oxidized Starches	326
	1. Nitrogen Dioxide-Oxidized Starch	327
	2. Other Oxidized Starches	328
V.	Graft Copolymers of Starch	329
VI.	Other Starch Derivatives	330
	1. Starch-Aldehyde Reaction Products	330
	2. Starch Alkoxides	330
	3. Deoxy Starches	331
	4. Miscellaneous Derivatives	332
VII.	Analysis of Starch Derivatives	332
VIII.	F.D.A. Approved Starch Derivatives	333
IX.	References	334

BEST AVAILABLE COPY

I. INTRODUCTION

This chapter serves two purposes. The first is to introduce the subject of starch derivatives, their preparation, properties and uses. As such, it is an introduction to six succeeding chapters which, in turn, discuss the preparation and uses of starch phosphate, starch acetate, cationic starches, hydroxyethylstarch, dialdehyde starch, and cross-bonded